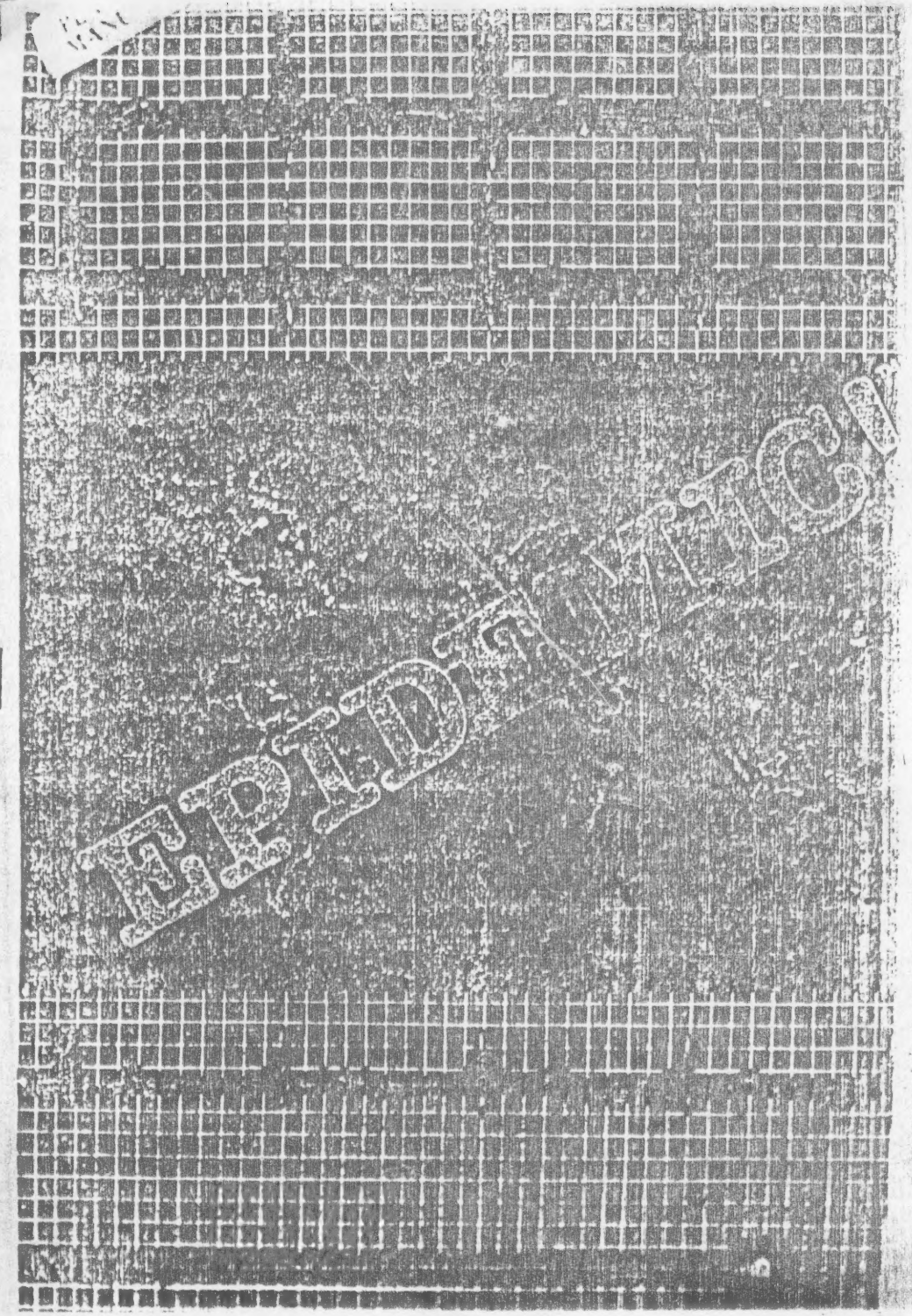

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1.0 INTRODUCTION

At last we know what happened to the dinosaurs. That's the good news. The bad news is WE'RE NEXT!

When Voyager 2 trained its cameras on Uranus in 1989, mission scientists were surprised by the discovery of a huge swarm of meteoroids slowly drifting toward an apparent intercept with Earth. Subsequent calculations demonstrated an orbit vastly beyond the borders of the solar system with a period of sixty-five million years, making our previous encounter exactly coincidental with the death of the dinosaurs. Material samples were collected by the Japanese/American deep space probe, TOYOTA XVI, and returned for study. The tragic loss of Dr. Sagan and the entire staffs of JPL and the Center for Disease Control confirmed what the tabloids had been screaming for months: the meteoroids are infected with a deadly alien virus. When a meteorite — euphemistically referred to as a "Radar Target" — crashes on land, the virus is activated and an epidemic immediately begins. If not controlled, the disease will completely destroy the population of that region within eight to fifteen days.

You are part of an international task force marshalling the world's resources and medical technology to escape this catastrophe. From your isolated command center in Antarctica, your shift — which will last between fifteen and thirty days (turns) — begins. You will be rated on how well you combat the explosively expanding epidemics with the finite resources available to you.

The fate of mankind rests on your every keystroke.

2.0 ORGANIZATION AND DEFINITIONS

The game is organized into a series of turns, each representing a twenty-four-hour period. Each turn is comprised of the following four phases, presented in the same order each turn:

STATUS UPDATE PHASE	[See 4.1]*
RADAR UPDATE PHASE	[See 4.2]
SURFACE MAP UPDATE PHASE	[See 4.3]
PLAYER OPTION PHASE	[See 5.0]

* Bracketed numbers refer to descriptive sections on these phases.

This sequence continues until the player achieves victory, fails, or comes to the end of the number of turns for the skill level he has selected [See 6.0, 7.0].

A description of the terms used in the game and this manual follows.

2.1 REGIONS

The world is divided into fourteen regions, numbered from one to fourteen, as follows:

1. CANADA
2. UNITED STATES
3. MEXICO/CENTRAL AMERICA
4. SOUTH AMERICA
5. GREENLAND
6. SCANDINAVIA
7. WESTERN EUROPE
8. EASTERN EUROPE
9. AFRICA
10. MIDDLE EAST
11. SOVIET UNION
12. INDIAN SUBCONTINENT
13. ASIA
14. AUSTRALIA

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2.1.1 CONNECTIONS

Under certain circumstances [See 2.2], an epidemic will spread from region to region, but only between regions who share either a common border or substantial commerce. These connections are listed below:

REGION #	CONNECTION(S)
1	2,5
2	1,3
3	2,4
4	3
5	1,6
6	5,7,8,11
7	6,8,9
8	6,7,10,11
9	7,10
10	8,9,11,12
11	6,8,10,12,13
12	10,11,13
13	11,12,14
14	13

2.2 LEVELS

The seriousness of a given epidemic is measured on a scale of levels from 0 to 6, as follows:

0	NO EPIDEMICS REPORTED
1 (1.0 — 1.9)	STASIS [See 2.2.5]
2 (2.0 — 2.9)	MILD [See 2.2.1]
3 (3.0 — 3.9)	SERIOUS [See 2.2.2]
4 (4.0 — 4.9)	CRITICAL [See 2.2.3]
5 (1.0 — 5.0)	PNEUMONIC [See 2.2.4]
6	DESTROYED [See 2.2.6]

2.2.1 LEVEL 2 — MILD

Most epidemics start at this level. There is some loss of life; and if inadvertantly ignored or inadequately combatted, they will increase to higher levels. Level 2 epidemics, however, will not spread to adjacent regions.

2.2.2 LEVEL 3 — SERIOUS

Mortality rate at this level is higher; and, in addition, once at Level 3, an epidemic may spread to uninfected adjoining regions.

2.2.3 LEVEL 4 — CRITICAL

Level 4 is similar to Level 3 with a further increase in mortality rate plus possibility of jumping to Pneumonic Level ahead of schedule [See 2.2.4].

2.2.4 LEVEL 5 — PNEUMONIC (P-PHASE)

In addition to the quantitative variations (Levels) of the epidemics, there are two qualitative categories, or Phases, labeled NORMAL (MILD through CRITICAL Levels), and PNEUMONIC (or P-PHASE).

The Pneumonic Level represents a change in the nature as well as the intensity of an epidemic. During this phase, the virus mutates, becomes airborne, and the mortality rate skyrockets. Once at the Pneumonic Level, an epidemic will totally destroy a region in five days unless totally cured (brought below Level 1).

When an epidemic reaches P-Phase a level of 5.0 is assigned. Subsequent remedies may reduce the numerical level, but the region is still Pneumonic, with a Pneumonic mortality rate, and the potential to spread to other regions until the numerical level is brought below 1.0.

2.2.5 LEVEL 1 — STASIS

If an epidemic is reduced to a level between 1.0 and 1.9 prior to reaching P-Phase, a condition referred to as Stasis occurs. At the Stasis Level, the number of new illnesses reported is large enough to trigger the production of antibodies in the immune systems of the population, but not large enough to increase in size or intensity. In other words, although

a small number of lives are lost each turn. The epidemic will not [illegible] regions, and will not progress to P-Phase. Also, presence of a Stasis Level epidemic will prevent the occurrence of a new epidemic by collision of a Radar Target [See 4.2.1], or from the spread of an epidemic in an adjoining region.

2.2.6 LEVEL 6 — DESTROYED

All life forms in a destroyed region have been killed, preventing any future epidemics in the region.

2.3 EPIDEMIC GROWTH

During each twenty-four-hour period, each active epidemic over Stasis Level will increase by about 15%. If a remedy is in effect, the reduction factor for that stage of that particular remedy will also be applied [See 2.4].

EXAMPLE: *An epidemic in Region # 3 was at Level 2.0 at the end of the previous turn. There is no remedy active in the region. On the subsequent turn, the epidemic increases by 15% to Level 2.3. This information is revealed to the player during the Status Update Phase of the game turn [See 4.1].*

The 15% per turn growth rate for epidemics is APPROXIMATE. Although the 15% figure is used consistently in the rule book for the purpose of illustration, in the actual game, the growth rate will vary between 15% and 15.75%, with higher percentages more likely in the more difficult skill levels.

2.3.1 PNEUMONIC GROWTH CEILING

One exception to the growth factor described above is the P-Phase epidemic which is at Level 5. Level 5.0 is the absolute ceiling for Pneumonic epidemics. Those P-Phase epidemics which have been reduced by successful remedies to a lower numerical level will be increased each turn — until reaching a maximum numerical level of 5.0 [See 2.4.2].

2.4 REMEDIES

The main weapon to combat epidemics is the "Remedy" (also referred to as "Cure"). There are two types of remedies, labeled TYPE A and TYPE B.

2.4.1 TYPE A (NORMAL REMEDIES)

Type A remedies are used to combat epidemics which have not reached the Pneumonic Level.

Each Type A remedy has a duration — or period of effectiveness — of from one to five days. On each day of this lifespan, the remedy will reduce the level of its target epidemic by a specific percentage. By plotting these reduction factors and joining the points together, an "effectiveness curve" is derived. Each remedy has its unique effectiveness curve (See Type A Remedies on data card).

NOTE: *The logged percentages represent GROSS reduction factors, i.e., the percentage of reduction applied, without consideration of the simultaneous growth factor to be applied to the epidemic [See 2.3].*

EXAMPLE: *Remedy # A3 has a gross reduction factor of 25% for day # 2. On day # 2 this remedy will reduce the target epidemic by 25%. However, this reduction will be partially offset by a simultaneous increase due to the daily growth factor. The result is a NET reduction factor. In the example above, assuming an epidemic at Level 3.0, a 15% increase would raise the level to 3.45 (3.0 × 1.15 = 3.45). The simultaneous application of a gross reduction factor of 25% would result on an approximate level of 2.6, a reduction of .4 level points from 3.0, or a net reduction of about 13%. Therefore, a 25% gross reduction factor translates into a net reduction factor of roughly 13%.*

2.4.1.1 RANDOMIZATION OF EFFECTIVENESS CURVES

The reduction factors explained above are projected results of a given remedy. Obviously, in the field, things often go worse and sometimes go better than anticipated. The effectiveness curves should, therefore, be viewed as estimates. The actual results may fall slightly above or below the curve.

NOTE: *Although, in theory, any reduction applied against a Stasis level epidemic should result in a cure, because of the low priority of these "mop-up" missions, there is a 30% chance that an active remedy will have absolutely no effect on a Stasis level epidemic.*

2.4.1.2 PEAK REDUCTION POTENTIAL (PRP) and NET REDUCTION POTENTIAL (NRP)

The Peak Reduction Potential listed on the Remedy Chart is a measure of the reduction factor for the peak day of the remedy, adjusted for the growth offset as outlined in section 2.4.1.1.

The Net Reduction Potential (NRP) represents the approximate total percentage of reduction the player can expect at the Conclusion of the remedy. All the factors described above are applied each day of the remedy's lifespan.

2.4.1.3 RULES GOVERNING APPLICATION OF TYPE A REMEDIES

a) Only one remedy at a time may be applied in a given region. No subsequent remedy may be applied until the current active remedy is concluded.

b) Type A remedies may not be applied to P-Phase epidemics.

c) No remedy may be applied whose duration exceeds the length of time remaining till P-Phase.

EXAMPLE: *The shift to P-Phase in a given region is expected to occur in 4 days. The player may not use Remedies A6, A7 or A8 as the 5-day duration of these remedies exceeds the length of time prior to the onset of P-Phase.*

2.4.2 TYPE B (ANTI-PNEUMONIC REMEDIES or APR's)

Once at the Pneumonic Level, only Type B remedies may be used. There are four Type B remedies (B1–B4). Each Type B remedy lasts for one day only. Type B remedies yield much higher gross reduction factors, ranging from 60% to 90%, than Type A remedies. Type B remedies either totally succeed or totally fail. If successful, the numerical level is reduced by the stipulated percentage. If the result does not fall below 1.0, the epidemic is increased in level by 15%. If a Type B remedy fails, no reduction is imposed, but, providing the epidemic is below Level 5.0, the normal growth of 15% does occur.

The chance that an APR will succeed is called the Percentage of Success, or %S. The amount a successful APR will reduce a P-Phase epidemic is called the Percentage of Reduction, or %R. The higher the Percentage of Success, the lower the Percentage of Reduction. Type B remedies are outlined below.

REMEDY	%S	%R
B1	80%	60%
B2	60%	70%
B3	40%	80%
B4	20%	90%

EXAMPLE: *Remedy B2 has a 60% chance of succeeding. If successful, it will reduce the level of the epidemic by 70%.*

2.4.3 SIMULATION CONSIDERATIONS

Since strategic decisions are made on the basis of duration, success and reduction percentages, and effectiveness curves, knowledge of the actual procedures upon which each cure is based is not essential to playing the game. However, for those players who wish, Appendix A contains a full description of each remedy.

3.0 STARTING THE GAME

Instructions for starting the game can be found on the player aid card included with this game or the appropriate computer.

3.1 INITIALIZATION DIALOG

The computer will request the following specific information from the user prior to setting up the game.

3.1.1 SKILL LEVEL (1-4)

Level 1 is the most difficult; level 4 is the easiest [See 6.0].

3.1.2 NEW GAME OR RESTART

Offers the player the option of starting a new game or restarting a game in progress which has been saved previously.

Once options have been selected and approved, play progresses to the Normal Sequence of Play.

4.0 NORMAL SEQUENCE OF PLAY

Each turn represents a twenty-four hour period. Each game turn consists of the following steps, presented in order:

4.1 STATUS UPDATE

Each turn begins with a region-by-region status review comprised of two stages. In the first stage, the computer plots the data as of the close of the previous turn. Then, prior to progressing to the next region, the computer updates all applicable data to reflect the results of the passage of twenty-four hours. Items included in this update are:

4.1.1 LEVEL

Shows the level of the current epidemic, if any.

4.1.2 TREND

If the severity of the epidemic is increasing, an upward-pointing arrow appears in the box following the level. Likewise, a declining epidemic is indicated by a down arrow. "=" indicates an unchanged condition.

In performing its calculations, the computer utilizes up to eight decimal places. Since the Status Update Display shows only one decimal place (tenths), the computer may show an upward or downward arrow, indicating uptrend or downtrend, even though the Level shown on the screen seems unchanged. In other words, the display would show an up arrow for a region whose level changed from 2.42 to 2.45, although both conditions would show up as 2.4 on the display.

NOTE: *The arrow indicates Trend, not necessarily a Change in level (i.e., from MILD to SERIOUS). If an actual change in level occurs, it is indicated by supplemental text at the bottom of the screen.*

4.1.3 ETA C/P/D

ETA C Indicates the number of days remaining until the conclusion of the current active remedy in the region [See 2.4].

ETA P Indicates the number of days remaining until the epidemic becomes Pneumonic.

ETA D Indicates, for those regions with Pneumonic Level epidemics, the number of days remaining before the region is totally destroyed.

4.1.4 REMEDY TYPE

Indicates the type of remedy A1-A8, B1-B4, or NONE, as applicable.

4.1.5 REMEDY OFF/ON

If a remedy has concluded, or if no remedy is in effect, the OFF box is filled in color. Conversely, an active remedy is indicated by the ON box being filled.

4.1.6 APR — S/F

If an APR was administered in the region during the previous turn, the Success or Failure of that APR is indicated by the filling of the appropriate box.

4.1.7 MILS DEAD

Indicates the number of fatalities (in millions) for the region. Simultaneously, the total casualty figures for the entire world are updated, and printed at the bottom of the screen.

4.1.7.1 THE GREENLAND EXCEPTION

Since casualty figures for the game are calculated in millions, Greenland, having a population of only 50,000, does not register its casualties or population at any point during the game. In other words, no matter what condition Greenland is in, its population and casualties will always be listed as zero. In all other respects — epidemic levels, remedy effectiveness, etc. — Greenland acts normally. Strategically, Greenland is of great importance as it is the only bridge between the Americas and Western Europe, over which epidemics can spread.

4.1.8 CODEWORD ASSIGNMENT

After all regions have been updated, the player is briefly shown the current codeword. The codeword, which changes each turn, must be recalled and entered precisely in the arming sequence, should the player opt to detonate a nuclear device [See 5.5].

Although use of paper and pencil is allowed for all other areas, needless to say, since knowledge of the codeword unlocks the world's nuclear arsenals, writing it down is a gross violation of security regulations and is strictly prohibited. Penalty for such violations is a mandatory five-hour stint at Donkey Kong for each violation.

4.2 RADAR UPDATE

The Status Update is followed by the Radar Update. This display shows a radar map of the world with the fourteen regions outlined in white. Up to [illegible] Radar Targets (meteoroids) are displayed. The update begins with the targets occupying their positions as of the end of the previous turn. Then, one at a time, each target is advanced to its current position. This movement is broken into twelve equal steps, each step representing two hours' movement. Statistical data is provided at the bottom of the screen and is simultaneously updated with each move to reflect the following:

RNG: Range, or distance from Earth in miles.
VS: Vertical Speed, or rate at which target is approaching the Earth, in MPH.
LS: Lateral Speed and compass direction.

EXAMPLE: *A display showing —*
TGT: 1 / RNG: 66000 / VS: 1000 / LS: 200SW

translates as follows:

Target # 1 is 66,000 miles from Earth, approaching at 1000 MPH, and drifting at a rate of 200 MPH in a southwesterly direction.

4.2.1 TARGET IMPACTS

When the range of a target reaches zero, the target crashes, and the location of the impact and its results are shown. The three possible results of a target impacting are:

1. Target crashes into the sea — no effect.
2. Target crashes into a destroyed or already infected region — no effect.
3. Target crashes in a uninfected region — a new epidemic immediately begins.

A map scale showing a measure of 10,000 miles is included in the display to assist the player in projecting the impact point of an incoming target.

4.2.2 MISSILE LAUNCHES

If the player has ordered a missile launch in the previous turn [See 5.3], it will be announced, and the missile's range will read out directly below the target's range. When the missile reaches its target, the missile detonates, and the result of that detonation is displayed.

4.3 SURFACE MAP UPDATE

Following the Radar Update the player is shown a surface map of the world. Each infected or destroyed region is painted in with a particular graphic pattern. The condition of a region can be determined by its graphic appearance. These patterns vary from system to system; their description, and the condition they refer to can be found for the system you own, on the card included with this game.

During this phase, the map is updated to reflect any changes in level. Additionally, if any region-to-region spreads occur, they are displayed as well.

5.0 PLAYER OPTIONS MENU

At this point, when the three major daily update displays have been completed, the surface map is left on the screen for player reference, and the player option menu is displayed at the bottom.

The computer expects the player to request one of the following options by number:

(1) SAVE/END GAME
(2) REGIONAL UPDATE
(3) LAUNCH MISSILE
(4) DONE WITH TURN
(5) NUCLEAR DETONATION

5.1 (1) SAVE/END GAME

Allows the player to either terminate the game or save it on disk for later replay.

5.2 (2) REGIONAL UPDATE

This graphic display provides the player with a complete rundown on the region of his choice and its active epidemic and/or remedy. He may initiate a remedy if none is already in effect — or he may return to the options menu without cost to his options allotment [See 5.6].

After Option 2 has been selected, the computer requests the region number for update, which is entered (terminated with a "RETURN").

The top half of the screen displays complete data on the requested region. The left side of the bottom portion shows a chart of Type A remedies, their duration and status (OK/NA): If there is no current remedy in effect, a filled box in the OK column indicates that the remedy is

available. The A column indicates that, for one reason or another, the remedy is Not Available. When a remedy is in effect that remedy is flagged in the OK column. All other remedies are displayed NA.

On the right side of the screen Type B remedies are displayed in the same manner. In place of duration, however, the Type B display lists the Reduction and Success Percentages for each remedy. OK and NA are further abbreviated O and N, respectively.

If there is an active remedy in the region, the projected effectiveness curve for that remedy is plotted in white on the grid between the two charts. This display duplicates the scale and data illustrated in Type A Remedies on the data card. The ACTUAL curve of effectiveness realized up to the current day is superimposed in violet over the projected curve so that the player can determine how his remedy is performing vis-a-vis the nominal curve.

The bottom, right corner of the Regional Update Display is reserved for text input and output.

5.3 (3) LAUNCH MISSILE

Exercising this option returns the player to the Radar Map display. He is shown Radar Target #1 in its last plotted position, and is offered the option of moving to the next target or launching a missile at the target currently displayed. Included in this sequence are targets that are due to first appear in the following turn, allowing the player the advantage of ordering a preemptive strike on a threatening target.

The player is allowed one missile per target per turn. If he chooses to launch a missile at a given target, and then returns to the Missile Launch Option in the same turn, the targeted object will be omitted from the radar display and the target select sequence.

EXAMPLE: *On Turn 2, during the Radar Update Phase, Radar Target #3 impacts, and disappears from the screen. On Turn 3, the player will have a new Radar Target #3 to deal with, but he is not shown that target during the Turn 2 Radar Update. However, he may view the target by exercising the Launch Missile Option.*

NOTE: *The Launch Missile Option does NOT obligate the player to actually launch a missile. If he cycles through all the Radar Targets without launching a missile, he is returned to the Options Menu without cost to his Options Allotment.*

If he does choose to launch, the results will be displayed during the Radar Update Phase for the subsequent turn.

Missile velocities are averaged out at 5,000 MPH, and concurrent missile and Radar Target ranges are thus calculated. When the missile's range meets or exceeds the target's range, the missile is detonated. The success or failure of that detonation is determined by 2 factors:

1. The state of health of the United States, Soviet Union and Western Europe (the regions responsible for launching and guidance).
2. The range at detonation. (Beyond 10,000 miles, the chances of success steadily diminish.)

5.4 (4) DONE WITH TURN

If the player does not wish to exercise any additional options, this option will terminate his turn.

5.5 (5) NUCLEAR DETONATION

Occasionally, things get so out of hand that total destruction of a region is strategically advantageous. The player may do just that by ordering a nuclear detonation in that region. In order to do this he must enter the current codeword precisely when requested to by the computer. If there is any variation in spelling the detonation will be defaulted and he will be returned to the Options Menu.

NOTE: *Defaulted detonations DO count against the player's Options Allotment.*

5.6 OPTIONS ALLOTMENT

Depending on the Skill Level selected, the player is granted a specific number of options he may exercise during each turn. In Skill Level 1 & 2, three options are allowed; in Skill Level 3 & 4, two options are allowed, i.e., with an Options Allotment of three, a player may launch three missiles, OR initiate three remedies, OR order three nuclear detonations, OR initiate two remedies and launch one missile, or any other combination of these actions.

6.0 SKILL LEVELS

Basic differences between the different Skill Levels are illustrated below:

SKILL LEVEL	LENGTH OF GAME	OPTIONS ALLOTMENT	RADAR TARGETS (EACH TURN)
4	15 TURNS	2	2
3	20 TURNS	2	4
2	25 TURNS	3	6
1	30 TURNS	3	8

In addition to the variations listed above, increasing Skill Levels also increase the growth rate of epidemics, the vertical speed and the lateral speed of Radar Targets.

7.0 VICTORY CONDITIONS

At the conclusion of the game, the player is rated on the basis of:

A. The total number of casualties
B. The number and level of active epidemics remaining
C. The number of regions destroyed

A, B and C are adjusted for the Skill Level played, and regions in which the initial epidemics began, and translated into a performance factor per turn which falls in the range from 0 to 1000. Scores over 700 are considered to be a success while scores between 600 and 700 are considered to be a marginal success.

8.0 STRATEGY NOTES

The best approach to winning EPIDEMIC! is attempting a policy of containment. The game is structured so that, by the later turns, the player will have more problem areas requiring his attention than he has options available. This requires the establishment of priorities, up to and including abandoning certain regions altogether to concentrate on more strategically sensitive regions. In order to make this approach pay off, the player must isolate those regions. The value of maintaining STASIS LEVEL epidemics to shut off the route of spread cannot be overemphasized. Regions reduced to Stasis Level can usually be safely ignored until the game is well under control, and then cured one by one.

The player should also consider the size of population when setting regional priorities, as his rating depends, in part, on the number of casualties.

It is also important to give high priority to attacking epidemics in regions 2, 7 and 11 (the United States, Soviet Union and Western Europe), as the condition of these regions will affect the success of any future missile launches.

In selecting Type A remedies, the player should consider the major trade-off built into this aspect of the game, namely, that the most effective, most controlled approach is to apply remedy A1 repeatedly turn after turn until Stasis is reached. However, this approach forces the player to expend one of his options each turn until he is successful. Longer term remedies may fall short (because of a poor effectiveness curve) or go too far (and take the region past Stasis all the way to cure, only to be re-infected by a nearby region), but the player is freed from having to take action in the region for up to five turns.

9.0 ACKNOWLEDGEMENTS

Thanks to:
My computer widow, Debbie
My computer orphan, Ryan
The IBM FIVE
Donald Spector (for performing the world's first appendix transplant)
Collectively you know there may be as much adventure as simulation behind this game.

10.0 CREDITS

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Typesetting — Abra Type
Printing — A&a Printers and Lithographers
Customized Disk Operating System — Roland Gustafsson
Appendix — Compiled by Donald Spector

APPENDIX
(DESCRIPTION OF REMEDIES)

TYPE A REMEDIES

TYPE: A1/INTERFERON
DURATION: 1 DAY

Hypo-aerobic injections of interferon are extremely effective against the viral invasion. However, as always, the drug is in very short supply. Despite more than a decade of research, no effective means of synthesizing it has yet been discovered. And the most promising natural source of interferon found to date, the epididymus of the Mississippi Tree Toad, disappeared when the Toad Plague of '87 killed off the last of the tiny creatures. The result: because of its short supply, interferon is on allotment and no region is given more than a one-day supply to combat any epidemic within its borders.

TYPE: A2/VACCINE
DURATION: 2 DAYS

Mass live-virus vaccinations by mobile teams of epidemiologists have extremely good short-term effects against the disease. With the recent advances in nuclear medicine, these teams have been able to isolate the virus and cultivate vaccines faster than ever thought possible. However the extra-terrestrial virus has proven to be highly mutant and the MPBM (Mean Period Before Mutation) is less than 48 hours. Unfortunately, 97.6% of the mutations taste good to the virus and serve as food for it so treatment must stop within two days . . . before the mutations start.

TYPE: A3/X-RAYS
DURATION: 3 DAYS

With the introducton of the Irradiation Chamber, individual radiation treatments against the virus became practical. As the patient steps into the one-person chamber, his or her Height: Weight: Mass ratio is automatically calculated and the proper radiation dose begun. (In the Soviet Union a combination Irradiation Chamber/Voting Booth is being developed where the amount of radiation is determined by how the subject votes.) However, quality control at Mitsubishi's Detroit factory has proven less than satisfactory and after three days of continuous use the units will become unreliable and dangerous — excess or inadequate radiation and unacceptable leakage. They are, therefore, allowed a maximum of three days operation and are then subject to factory recall and overhaul.

TYPE: A4/MARTIAL LAW
DURATION: 4 DAYS

Although the martial law remedy does nothing to treat victims who have already contracted the virus, as a mandatory quarantine, it inhibits its spread. Businesses are closed and the population is restricted to its houses with the military and police forces combining to maintain compliance. In the Free World, the legality of imposing martial law in this case has been questioned. And with the near-success of the Satellite Uprisings in the late 80's, the Soviet Union is reluctant to aggravate the still-shaky detente within its own borders with naked shows of force. The result: the populace will accept this remedy for no more than four days.

TYPE: A5/GAMMA GLOBULIN
DURATION: 4 DAYS

Subcutaneous injections of Gamma Globulin, isolated from the blood of people infected with the virus, contain strong antibodies proven effective in immunizing people. The problem is that by law, such donations of blood must be voluntary. Computer simulations of the situation show the same projected behavior: an initial wave of [illegible] gladly donating their blood. Then, within four days, a wave of resentment by victims against the healthy and a dramatic drop in donations. Efforts to purchase blood are likely to lead to a large black — or more accurately, red — market with attempts to pass off as victims' blood a wide variety of counterfeits including pig's blood, horse's blood and several brands of California red jug wines.

TYPE: A6/BACK FIRE
DURATION: 5 DAYS

Because of the relatively high level of stability of a Stasis condition, infection can neither enter a region that is in Stasis nor jump over it. In the Back Fire technique, by carefully monitored infection of people, a ring of Stasis Level is induced around a more highly infected area. Maintaining the delicate balance of Stasis is difficult but even more difficult is getting people to voluntarily infect themselves. The most practical method developed to date has been to incorporate the virus into the glue on the back of special postage stamps. As the graph demonstrates, there is an initial rise in effectiveness, then a two-day drop before a second rise. The two-day drop is the period most of the stamps will sit in the back of post offices waiting for postal employees to get around to distributing them.

TYPE: A7/CLEAN SUITS
DURATION: 5 DAYS

This remedy retards the spread of the epidemic with the use by the population of disposable body-covering suits originally developed to protect combatants in germ warfare environments. The initial three-day delay in this remedy taking hold will invariably be due to public resistance to wearing these baggy, loose-fitting garments. (This will be true everywhere except the Soviet Union where they will probably actually be considered quite stylish.) Several government projects to develop a line of designer clean suits have failed although a number of companies in Western Europe and the United States did succeed in developing clean suits featuring a small picture of the virus on the left side of the upper garment.

TYPE: A8/GENE SPLICE
DURATION: 5 DAYS

This represents the first broad-scale use of bio-engineering on the genetic level. By modifying the genetic structure of the virus, bio-engineers using laser scalpels render the virus non-harmful so that the only effect experienced by those invaded by the restructured virus is a tendency towards acid indigestion. The genetic surgery generally takes three days and the aerial dropping of the harmless virus over major population centers another day, so no progress is usually seen until late in the five-day life of the remedy.

TYPE B REMEDIES — PNEUMONIC

TYPE: B1/CLOUD SEEDING

When it was discovered that in a region that reaches the pneumonic stage the virus is generally airborne (which accounts for the speed of its spread), several avenues of remedies were opened up. The most conservative of these — that is, the one most likely to take effect — is Cloud Seeding. The rains produced by the seeding, if it works, rid the air of a high percentage of the virus and slow the spread of the disease. Although the technique of seeding clouds has progressed greatly from its early days, the seeding is still subject to the vagaries of prevailing winds and meteorological conditions. In 1988, the technique was tried in California during the Fourth Medfly Invasion. The amount of moisture in a cloud was miscalculated and along with removing most of the airborne pests, the resulting downpour also removed the city of Bakersfield to a point 17 miles closer to Los Angeles.

TYPE: B2/MICROWAVES

Scientists have developed a technique for turning the benign microwave relay stations (used around the world for long distance telecommunications) into deadly microwave beam generators. By increasing the power to several stations by a factor of 11.5, focusing their dishes into the same airspace, and synchronizing the wave pulses of the stations, viruses are literally broiled out of the air. The effect is similar to what happens in a normal microwave oven — the viruses are cooked in a fraction of the time it would normally take and there's no messy cleanup afterwards. Inhabitants of the area are advised to stay indoors until the bell rings.

TYPE: B3/FIRE STORMS

A less controllable but potentially more effective way to cook the airborne virus is to generate huge aerial fire storms. For this, the now-obsolete DC-10 aerial tankers have been brought from retirement. Their huge bellies are filled with liquid methane and, flying over a designated area at an altitude of 50,000 feet, they jettison the liquid. A huge cloud of flammable methane vapor forms into which a jet fighter drops a salvo of magnesium flares. Because of the unpredictable dispersal rate of the methane, there is only a 40 percent chance of igniting the cloud. If it does ignite, there is only a 30% chance that the pilot will not have his plane broiled out from under him forcing him to ride his ejection capsule down through the fire storm. This leads to a catch-22 situation: any pilot drunk enough to volunteer for the mission is too drunk to fly.

TYPE: B4/KILLER SATELLITES

The United States has finally reluctantly admitted the existence of its killer satellites, satellites armed with high energy particle beam accelerators capable of incinerating dozens of square miles of the earth's surface at a time. As atmospheric virus cookers they have no equal. This cannot be said for the military personnel in charge of them. Under strict orders from Air Force Chief of Staff Judith Rice, the military refuses to divulge which of the dozens of satellites orbiting Earth are killers. Therefore, if you call upon this remedy for a particular region, odds are only one in five that a killer satellite will be over your region at the time of beam accelerator firing. Although conceding that the military's secrecy will result in the loss of millions of lives, General Rice stated that "... it's a small price to pay for safeguarding those satellites. Do you know how much those things cost?"

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